The Oracle

Newsletter of the Silver Springs Radio Club

Oldest Radio Club in Marion County, FL

K4GSO.us

November 2020

President's Message

Elbert Wilkinson, KQ3K

2020 HAMFEST:
Now is the time for all good hams to come to the aid of their club! No, this is not a typing exercise like we used to have in junior high school. This is real life and a call to action right now to help your club successfully execute our hamfest. Your help is desperately needed on December 4th for setup and working the event on the 5th, so please go to K4GSO.US and signup.

For those who have not been paying attention, Hamfest will again be held at First Christian Church, Ocala. This year's event will be different because of social distancing requirements. Masks will be required and temperatures taken to gain entry into the Memorial and Fellowship Halls. Inside capacity may be limited if necessary as a public safety measure.

There will be eight commercial vendors only in the church's Memorial Hall. The smaller Fellowship hall will be for any overflow commercial vendors and individuals who have requested inside space. There are 15 tables of which six have been reserved. If you want to reserve a table, you need to act now. First come, first served.

We had some issues with the food truck last year. This year, hamfest food will be handled by the church's Scout Troop, so please patronize them – often!

All of our plans are also contingent upon no further surprise restrictions by the various governmental entities. Hopefully all of this will work out, but some things and events are simply beyond our control. Club membership will be updated as our plans evolve, so stay tuned!

MEMBERSHIP:
Don't forget, MEMBERSHIP is still job #1. Despite the COVID pandemic restrictions, we have continued to pick up another new application or two. Older members, we need you to help new members, especially those recently licensed, so adopt someone. This is important for their success in the hobby and us as a club. The sheer volume of information and technical details can be overwhelming, so help them out. End of sermon for this month. Rinse and repeat next month!

Continued on next page….

Next Club Meeting

November 17, 7:00 PM

Election of 2021 Officers/Hamfest

via Zoom

Silver Springs Radio Club 2020 Hamfest

Saturday, December 5th

Setup: Friday December 4th

Sign Up to Help!

Silver Springs Radio Club Net

K4GSO Repeater

Mondays at 7:30 PM

146.610, PL 123

OFFICER AND BOARD ELECTIONS:

I'll bet you thought that November 3rd was the only important election held this month. Well, you are wrong. Your nominating committee comprised of Bill Gillespie, Treasurer, KW5BG, Marty Brown, N4GL and Gilbert Gyarmati, K4GLG, has been busy working to fill next year's officer and director positions. After much deliberation and serious arm twisting, they proposed the following slate for 2021 at the October General ZOOM Meeting:

OFFICERS
President—Bill Gillespie, KW5BG
Vise President—Jim Burgess, KN4MIV
Secretary—Ivory Williams, W6IVY
Treasurer—Tom Lufkin, W4DAX

DIRECTORS
Gilbert Gyarmati, K4GLG
Mike Condon, W9MNC
Wayne Brown, N4FP

Thank you Bill for moving up and Tom and Gilbert for agreeing to serve. Your fresh perspectives will be welcomed. Just think, the club only has a little more than a month to put up with me as President. However, per the By-Laws, I will serve on the 2021 board as the immediate past president, so you aren't getting rid of me just yet.

Also, per the By-Laws, elections will be at the November meeting. Watch your email for the invitation and please plan to attend. Officers and Directors will take office on January 1.

ARES:

Mike Condon, W9MNC, will be officially replacing Ron Viola, KS4SW, as Emergency Coordinator. Mike has served as an AEC for some years and will need everyone's support as he transitions to his new role. Many thanks, Mike, for taking on this important job. ARES still needs someone to step into Carl Berry's, KC5CMX, AEC role. Anyone interested, please contact Mike Condon.

The position of ARES net control manager is also open for anyone interested.

HAM SCHOOL:

Instead of the oppressive summer heat and with cooler weather now upon us coupled with a loosening of COVID restrictions, it is time to resume Ham School on Saturday mornings. We have a number of new amateurs who may need mentoring, but it is not limited to just them – all can benefit. One thing to note – Ham School is not limited to SSRC members – we will teach and demonstrate to any licensed amateur. We all learn from each other. Send in your suggestions and requests and we will try to get an "expert" to help teach the requested subject matter. Look for Ham School to resume in January.

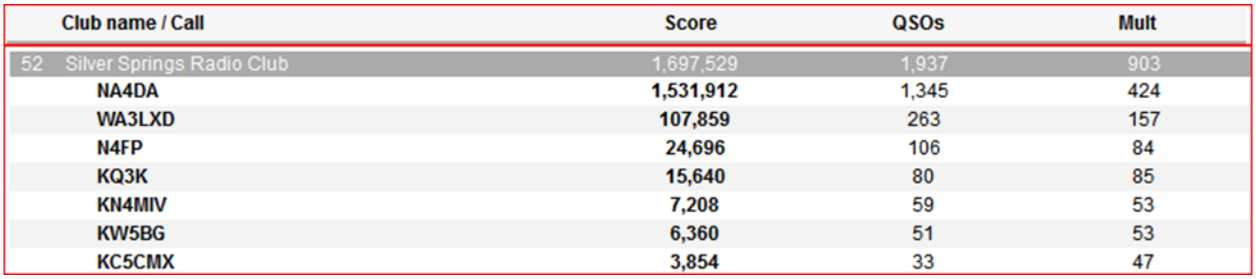
UPCOMING EVENTS:

The next club General Meeting will be on November 17th via ZOOM. You will receive an invitation from me, so please watch for it in your email. Election of 2021 officers and directors is scheduled as well as the Hamfest operation plan.

CQ WORLDWIDE DX CONTEST – SSB:

The CQ Worldwide DX Contest – SSB took place on October 24 – 25th. You may remember that we've been asking club members to join in as a team and participate. We're up to seven who now join in with their results posted below.

Andy, NA4DA, clearly led the pack from his contest station and is an inspiration to us all. Dave, WA3LXD, came in second. All in all, it was a fun event and we made a lot of DX contacts and put SSRC on the map as an active participant. Well done!



	Club name / Call	Score	QSOs	Mult
52	Silver Springs Radio Club	1,697,529	1,937	903
	NA4DA	1,531,912	1,345	424
	WA3LXD	107,859	263	157
	N4FP	24,696	106	84
	KQ3K	15,640	80	85
	KN4MIV	7,208	59	53
	KW5BG	6,360	51	53
	KC5CMX	3,854	33	47

Next up is the **CQ WORLDWIDE DX CONTEST – CW** on November 28 and 29th. The rules can be found here: https://www.cqww.com/rules.htm The same basic logging and online reporting setups used for the SSB are used for this contest as well. Our club is blessed with some outstanding CW operators, so we should have a good showing from them. Those who are not as proficient in CW can still participate to the best of their abilities. Give it a try!

THE ORACLE:

Thank you to all the members who send Marty, N4GL, articles for the club newsletter. Your contributions help make our newsletter interesting and informative. It can be on anything you been doing, working on, experimenting with, etc. – you know the drill. Please send your articles to her at ---->>>> N4GL.MARTY@GMAIL.COM Marty is also looking for member spotlights, so if you would like to add yours, please send it to her at the above email.

With a little luck, we will be done with all these COVID-19 virus restrictions and we can get back to normal. Stay well and safe.

Ham On and be Radio-Active! That is all.

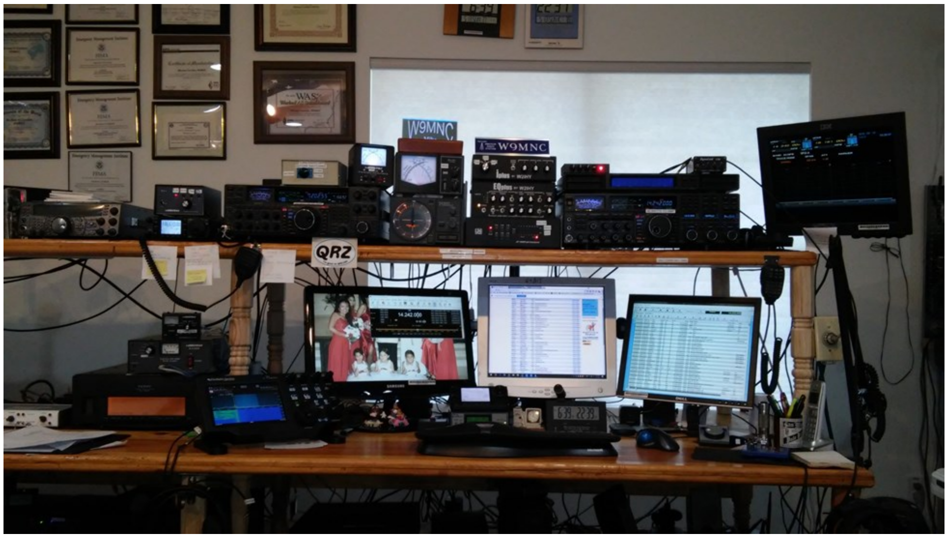
SSRC Member Biographies

Mike Condon, W9MNC

Emergency Coordinator, Marion County
Director, Silver Springs Radio Club

As of November 1st, Mike Condon, W9MNC, has taken over as the Emergency Coordinator (EC) for Marion County. Mike replaced Ron Viola, KS4SW, also an SSRC member. Our club stands strong for emergency preparedness. Mike's new position makes him the perfect person for our November biography.

Being a Ham Radio Operator is a dream come true. I was interested in getting my license when I was still in the Air Force. My first taste of Ham Radio was in the Philippines. I went to the MARS station on base and saw what they did. From that time on I was hooked. I wanted to be a Ham Radio operator.



I learned the morse code at least 6 times. Being in the Military and overseas I could not find any place to get tested so I never got a license.

In the early 1960's I got my first CB radio. I met a lot of people that way. I was in and out of the States and when I was overseas I couldn't use the CB. When I came back to the States and retired from the Air Force I got back into the CB radio. I spent some time with the CB crowd until I couldn't take the language any more.

In late 2007 I thought about getting back into CB until I remembered how it was and why I quit using it. I thought about getting into Ham Radio. I knew that I could get a waiver from the code because of my bad hearing. After looking around for a place to do the testing I found out that I could get the testing done in Madison, Wisconsin and that they removed the requirement for the code. That was all it took. I got the books for Tech and General, studied and when the local group held a class for Tech the end of February 2008 I went to it and tested. After I passed the Tech I tested and passed the General so here I am with a General Class license. In February 2012 I took the test for Extra and passed that.

As soon as I could get on the internet I ordered me my second radio. I already went out and got a handheld 2 meter / 440 meter radio. I put up a 20 and 17 meter wire dipole and I was on the air ready to make my first contact. Contact number 1 was on March 6, 2008 to KB5YQ in Texas on 20 meter phone. You have to look at my "Contact and QSO Information" page for my latest contacts and my "My Ham Shack" page for the latest in my equipment. I think I have learned that this hobby is very costly or just a few dollars depending on what you want. If you hear me on the air give me a holler. I like to have a conversation with my contacts not just the call sign and RST's. To me that isn't fun.

To find out more about Mike's journey in amateur radio, check out www.w9mnc.com

Whispering in the Field

by Bert Garcia N8NN

Obtaining real-time performance measures of your portable antennas in the field is not easy. You can measure the SWR and input impedance with an antenna analyzer but obtaining reliable on-the-air measurements from distant locations requires at a minimum a transmitter and a cellphone. I chose to use a Weak Signal Propagation Reporter (WSPR) transmitter from https://ZachTek.com (1) shown in Figure 1. The WSPR TX Desktop is a low power transmitter with an Arduino minicomputer that encodes and transmits WSPR packets.

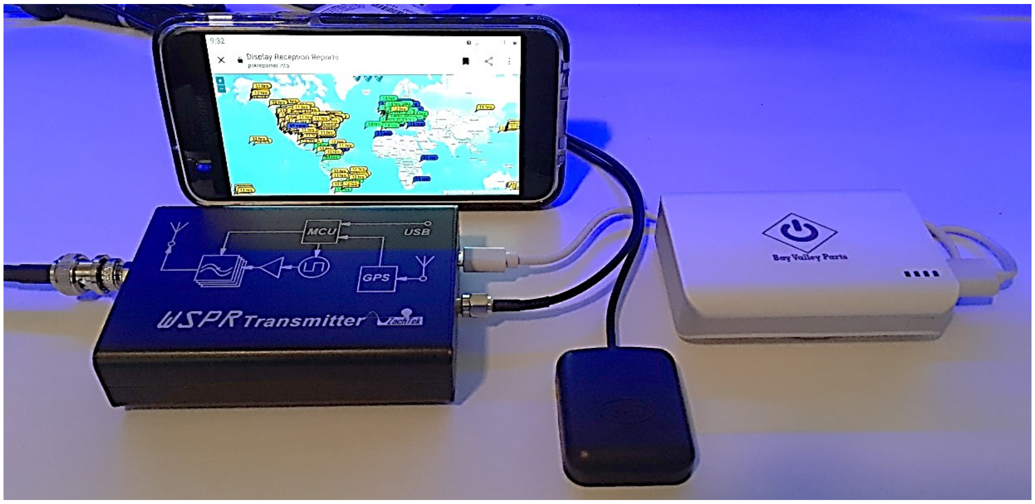


Figure 1: My WSPR TX portable setup in action.

In Figure 1 the WSPR TX is on the left and a 5-volt battery supply is on the right. The GPS antenna in the center is used to obtain accurate time and location information for the WSPR beacon and is included with the transmitter. A cellphone displays real-time reports from pskreporter.info, wspr.aprsinfo.com, or wspnet.org. Although the cellphone worked, it was slow to display reports, so a better solution is a laptop with an internet hotspot for faster results and a more useable interface. I prefer to use wspr.aprsinfo.com for ease of use.

My WSPR TX MidPlus model operates on 160/80/40/30/20 meters as a WSPR beacon transmitter. The WSPR TX HighPlus model operates on 17/15/12/10/6 meters. When the sunspot cycle improves, the HighPlus model will be more useful. The output power is 200 milliwatts. Using an end-fed wire antenna, my 200 milliwatts WSPR beacon was spotted on 20 meters in Brazil, Austria, Canary Islands, and Finland on the first transmission.

Looking inside the WSPR TX in Figure 2, on the lower left are the four low pass filters that are selected in the initial setup so the WSPR TX can change bands automatically during a beacon cycle. You can select any configuration of one to four bands. Everything is controlled by an Arduino minicomputer. The software is open source should you care to tinker with it.

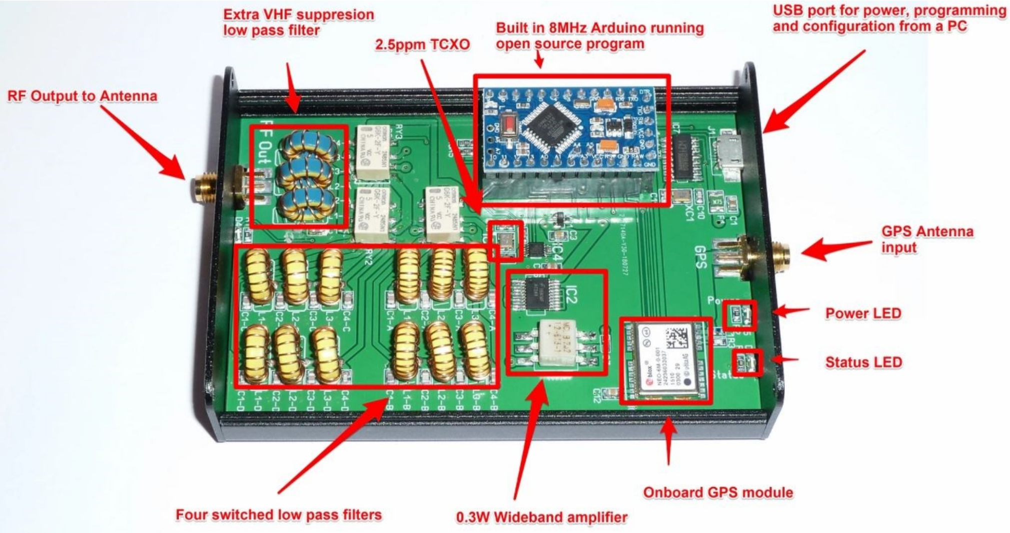

Extra VHF suppresion low pass filter
2.5ppm TCXO
Built in 8MHz Arduino running open source program
USB port for power, programming and configuration from a PC
RF Output to Antenna
GPS Antenna input
Power LED
Status LED
Four switched low pass filters
0.3W Wideband amplifier
Onboard GPS module

Figure 2: Inside the WSPR TX. *Photo from Zachtek.com by permission.*

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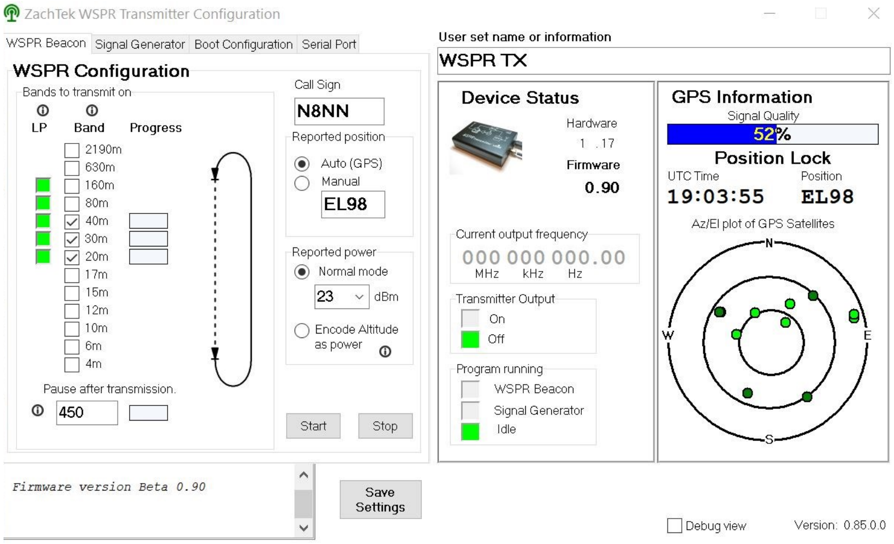
Figure 3 shows the free software setup program used to set your callsign, select the bands and start transmitting. All the setup parameters are saved so the next time you apply power to the WSPR TX it will resume as a WSPR beacon without needing a computer. Any USB power source will operate the beacon. I used a cellphone charger battery in the field. The WSPR TX draws 250 milliamps when transmitting, 100 milliamps when idle.



Bands to transmit on

☐ 2190m
☐ 630m
☐ 160m
☐ 80m
☑ 40m
☑ 30m
☑ 20m
☐ 17m
☐ 15m
☐ 12m
☐ 10m
☐ 6m
☐ 4m

Pause after transmission. 450

Call Sign: N8NN

Reported position: ● Auto (GPS) ○ Manual EL98

Reported power: ● Normal mode 23 dBm ○ Encode Altitude as power

Firmware version Beta 0.90

User set name or information: WSPR TX

Hardware 1 .17
Firmware 0.90

Current output frequency: 000 000 000.00 MHz kHz Hz

Transmitter Output: ☐ On 🟩 Off

Program running: ☐ WSPR Beacon ☐ Signal Generator 🟩 Idle

Signal Quality 52%

Position Lock
UTC Time 19:03:55
Position EL98

☐ Debug view
Version: 0.85.0.0

Figure 3: WSPR configuration software.

You can also use the WSPR TX as a signal generator. The WSPR TX from ZachTek is a handy piece of equipment to have in the field or at home.

References:
1. WSPR TX Desktop https://www.zachtek.com/1012, $139 plus shipping.
2. WSPR information http://www.arrl.org/wspr.

* * *

The New Age of QRSS

Scott Harden,AJ4DV

QRSS is an experimental radio mode that uses frequency-shift-keyed (FSK) continuous wave (CW) Morse code to transmit messages that **can be decoded visually by inspecting the radio frequency spectrogram.** The name "QRSS" is a derivation of the Q code "QRS", a phrase Morse code operators send to indicate the transmitter needs to slow down. The extra "S" means slow way, *way* down, and at the typical speed of 6 second dots and 18 second dashes most QRSS operators have just enough time to send their call sign once every ten minutes (as required by federal law). These slow Morse code messages can be decoded by visual inspection of spectrograms created by computer software processing the received audio. A QRSS grabber is a radio/computer setup configured to upload the latest radio spectrogram to the internet every 10 minutes. QRSS Plus is an automatically-updating list of active QRSS grabbers around the world, allowing the QRSS community to see QRSS transmitters being detected all over the world.

QRSS allows miniscule amounts of power to send messages enormous distances. For example, 200 mW QRSS transmitters are routinely spotted on QRSS grabbers thousands of miles away. The key to this resilience lies in the fact that spectrograms can be designed which average several seconds of audio into each pixel. By averaging audio in this way, the level of the noise (which is random and averages toward zero) falls below the level of the signal, allowing visualization of signals on the spectrogram which are too deep in the noise to be heard by ear.

To find out more about Scott's fascinating research, and Scott himself, go to:
https://swharden.com/blog/2020-10-03-new-age-of-qrss/

SILVER SPRINGS RADIO CLUB 2020 HAMFEST

Saturday, December 5, 2020

FIRST CHRISTIAN CHURCH

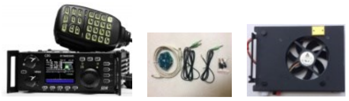
1908 EAST FORT KING STREET, OCALA, FL 34471
DOORS OPEN AT 7:30 AM

SPECIAL NOTE:
Due to current COVID-19 Restrictions, face masks/coverings are required by City of Ocala while attending the Hamfest. Attendees must bring own face masks and will need mask to buy a ticket. Temperatures will be taken at door to gain entry. Table layout designed to promote social distancing and avoid overcrowding. Inside occupancy may be limited to avoid overcrowding. SSRC will follow all applicable official restrictions.

Grand prize and door prizes

Grand prize ticket is separate from door prize ticket. Both are available at the door only! Admission ticket stub good for door prizes only. No online sales

Grand Prize



XIEGU G90 HF SDR, CE-19 & Cooling Fan

VE TESTING - one session @ 10:00 am, Green Clover Hall 319 SE 26th Terrace, Ocala, FL - 1/2mile east of the Hamfest in the McPherson Governmental Complex. Look for road sign! Bring two forms of ID, FRN if issued and FCC License if upgrading. Test Fee $15 cash.
Test slots are limited. Preregistration is recommended at K4GSO.US

Commercial vendors - Main Hall only
TOWER ELECTRONICS
SIGNMAN OF BATON ROUGE
HAMWORLD
J T COMMUNICATIONS
PARADAN RADIO
CCTV ELECTRONICS
NITEFIRE ELECTRONICS

Active military and first responders in uniform and kids under 12 free. Must buy tickets for Grand Prize and door prizes.

Inside flea-market tables in adjacent hall & under semi-covered overhang areas subject to social distancing restrictions. All outside flea market locations on a first come first served basis.
(BRING YOUR OWN TABLE & CHAIRS)

Food and drinks available for purchase from Scout Troop 439

TALK-IN ON K4GSO VHF 146.610 PL 123 -

GENERAL ADMISSION	$10
TAILGATE – CAR & DRIVER	$20
ADDIIONAL TAILGATE SPACE	$10 each
ADDITIONAL PERSON	$10

MORE INFORMATION ON THE SSRC WEBSITE: K4GSO.US/HAMFEST

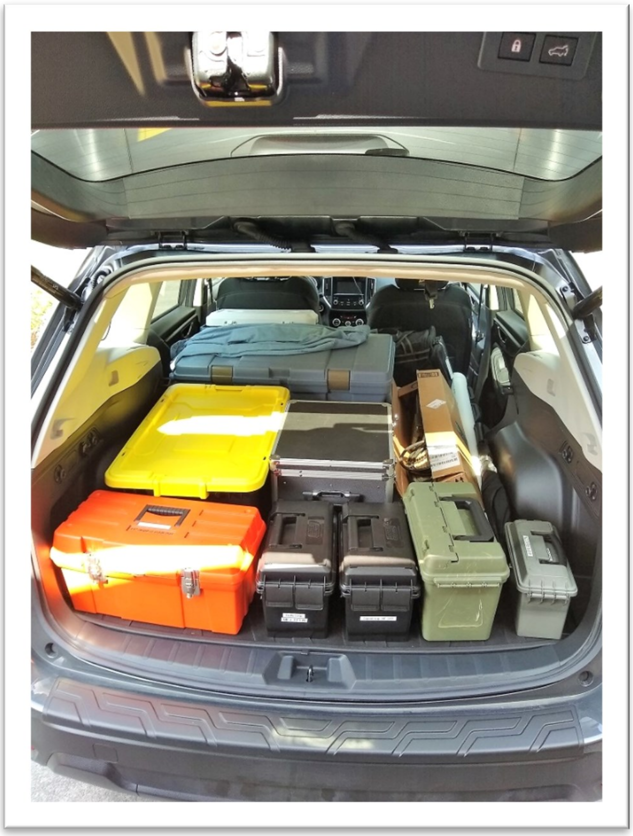
HamTenna Vacation (or, How I Spent my Fall Vacation), Part 1

Darrell Franchuk KG4CCB

My wife and I spent 4 weeks outside Knoxville, TN from mid-September to mid-October in a rented house in Tellico Village alongside the Tennessee River / Tellico Lake. We went there to see colorful fall foliage while driving mountain roads in our Mazda Miata with the top down. To our dismay we discovered those are mutually exclusive objectives. We also visited with our son / daughter-in-law. But I digress.

Knowing Charlotte would be doing some part-time remote work and I would have a moderate amount of time available; I took along a bit of radio equipment which consisted of my FT-818 and accessories, a few antennas, and a 12-v battery / power system. The largest containers in the photo are 30 days of personal items.

The house is on sloped grade with an elevated deck at the rear about 13-ft above grade. This is where I set up the antennas which consisted of a 40-ft Spiderbeam mast, an MFJ End-Fed Longwire, Bert's 20m Delta Loop, an MFJ 935B Loop Tuner / loop, an ElberVert, and a SignaLink 40-10m loop antenna. WSPR transmissions were made at 2.5watts with the FT-818 / WSJT-X / Dell laptop on 20m and 40m. One transmission cycle was performed with my SOTA Beams WSPR Lite beacon. Receiving was done with the FT-818 and with an SDR Play 1A / Dell laptop / SDR Uno software.



Receive cycles mostly ran for 24 hours each to see a complete day; however, it was necessary to limit transmission cycles to daytime hours and hours where I was at the house. That prevented too close a comparison between antennas that may have transmitted during different hour periods (i.e., morning versus evening). In all, 17 Receive cycles and 13 Transmission cycles were conducted. Below are most cycles for the various equipment configurations. The MFJ Loop and Dela Loop are 20m only. DX stations were mostly Europe, but included the Canary Islands, S Africa, Latin America, and Australia.

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Receiver	Antenna	Band	Spots	DX	Spots/Hr	Most km
FT-818	MFJ Loop	20	83	4	3	7368
	SignaLoop		289	5	12	6875
	Mast / EFLW		381	18	16	7538
	ElberVert		1677	34	70	18115
	Delta Loop		265	9	10	7106
	SignaLoop	40	1803	3	74	14575
	Mast / EFLW		2064	3	86	13106
	ElberVert		973	1	41	6536
SDR Play	SignaLoop	20	918	20	38	15665
	Mast / EFLW		344	2	19	6385
	Delta Loop		260	2	19	7106
	SignaLoop	40	3003	9	125	18105
	Mast / EFLW		4583	5	95	12699
	ElberVert		443	0	18	3151

These are the observations I pull out of this data; perhaps others see more:

- The greatest number of spots mostly occurred on 40 meters which is the same as my home station experience.
- Vertical antennas were effective, both the ElberVert and the Mast/EFLW which was arranged essentially as a vertical.
- The SignaLoop seems much better than the MFJ Loop; however, I didn't test the MFJ Loop with the SDR Play which, surprisingly, sometimes performs better than the FT-818. Note the difference between the SDR Play and the FT-818 with the SignaLoop.
- The ElberVert performed better on 20m than 40m, but I don't have 20m with the SDR Play for further comparison.

Below are the top five transmission periods, based on the number of spots. All are 2.5 watts. On our last day, I ran the WSPR Lite at 200mw with the ElberVert antenna for a period of 2.75 hours during the early afternoon and generated 125 spots that included 3 European locations and the Canary Islands besides NE and Western U.S.

Transmitter	Antenna	Band	Spots	DX	Spots/Hr	Most km
FT-818	EFLW / Mast	40	3513	37	270	15788
	ElberVert		2572	15	180	7459
	SignaLoop		1431	5	114	7105
	Delta Loop	20	1216	45	78	7459
	EFLW / Mast		1030	50	114	15629

Additional testing would have been necessary to make further comparisons between antennas and between the F-818 and the SDR Play. But I must say that I am impressed with the performance of the SDR Play, a little black box that costs $120. In general, I was a bit disappointed with the MFJ Loop antenna, but it is useful in hotels when access to an outside antenna is not possible. The SignaLoop antenna is another potential good option for inside use. Perhaps $500 for a Chameleon is a good option, but I am not able to bring myself to spend that for a Loop.

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Besides the antenna testing at the house, I also did a brief session on the Cherohala Skyway with the FT-818 and a Diamond HFJ-350M portable and went to a local city park with the FT-818 and the EFLW / Mast to set up an Inverted V as well as mobile magnetic antennas on the roof of Charlotte's Forester for a little SSB activity. On the Skyway there was a bit of activity on 20m and 40m and I attempted a couple net check-ins and CQ transmissions, but with no success.

At the Lenoir City Park (Day 1) with the magnetic mobile antenna there was a bit of traffic and I attempted a few net check-ins and CQ transmissions with no success on 40m. I was able to connect with a POTA Activator in Florida (K4NYM at K-4629) on 20m.

On Day 2 I set up in a different location in the park. Here I used the Spiderbeam mast / EFLW in an Inverted V configuration. I contacted POTA Activators in Michigan and S Carolina with 5-7 signal reports.

On Day 3 I set up in another area in the park and had difficulty getting the EFLW / Mast to achieve resonance, which was complicated by having forgot to bring along the compact MFJ antenna tuner. None the less, there was a notable amount of traffic, but I was unable to made contact. About ½ of my 3-hour session was spent with antenna set-up.

On Day 4 I set up in yet another location in the park. Here I was able to contact a POTA Activator in Georgia, this time on 40m (KE4GTQ at K-2902) but I was not successful with net check-ins or CQ transmissions. The Day 2 location was moist soil near the water's edge whereas the Day 3 and Day 4 locations were on higher, and dryer, ground a short distance from the water.

On the Cherohala Skyway / Day 3 at Lenoir City Park

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News You Can Use

- SSRC Logo Shirts & Caps
- Green Clover Key Card
- Perry Field Access
- Membership Application
- Buy/Sell/Trade
- *QST NFL* – NFL Section Newsletter
- Silver Springs Radio Club Website
- NFL Section Website
- WA7BNM Contest Calendar
- NG3K DX

Club Minutes and Financial Reports

2020 SSRC Officers

President - Elbert Wilkinson, KQ3K
V President – Jim Burgess, KN4MIV
Secretary – Ivory Williams, W6IVY
Treasurer – Bill Gillespie, KW5BG

Directors

Ron Viola, KS4SW
Mike Condon, W9MNC
Wayne Brown, N4FP

Committee Chairs:

Membership – Elbert Wilkinson, KQ3K
Trustee K4GSO – Wayne Brown, N4FP
Newsletter – Marty Brown, N4GL

Trailer Hitch Mount HF Antenna Testing, Part 2

Darrell Franchuk – KG4CCB

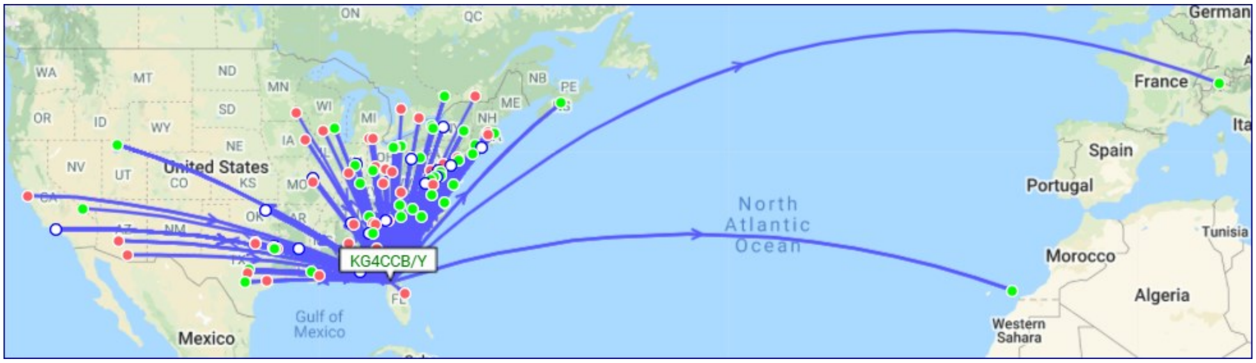
In the previous episode, I described the rationale for, and process of, testing a 20-meter Ham Stick antenna in a trailer hitch mount. Since I had a reasonable, and surprising, amount of propagation success with that I decided to follow up with a similar test with a 40-meter Ham Stick. During this new round of testing I did not use all four compass orientations as previously but chose to do only SE and NW orientation which previously yielded the best results. Following is a results summary. Transmission cycles are not fully comparable due to varying shut-down times (morning versus evening, for example) because of nighttime sleep and times away from home.

Transmissions

Orientation	Total Spots	# Hours	Distribution	Most km	Least km
Southeast	842	18.5	U.S., EU, Canary Isles	-	-
Northwest	679	13.5	U.S., CA, PR, EU	7778	343

Receiving

Orientation	Total spots	# Hours	Europe	Other DX	Most km	Least km
Southeast	916	24	0	0	3772	199
Northwest	1188	24	0	1	3493	241



Combined transmit / receive with 40m Ham Stick in Hitch mount vehicle aimed SE

Having determined that the 40m Ham Stick antenna performs moderately well (domestically anyway) in the trailer hitch mount, I then compared the Ham Sticks against Hustler RM-20 and RM-40 coil loaded whips in a rooftop magnetic mount. I chose to stick with NW orientation. Sample results maps are provided below that illustrate 20-meter and 40-meter comparisons.

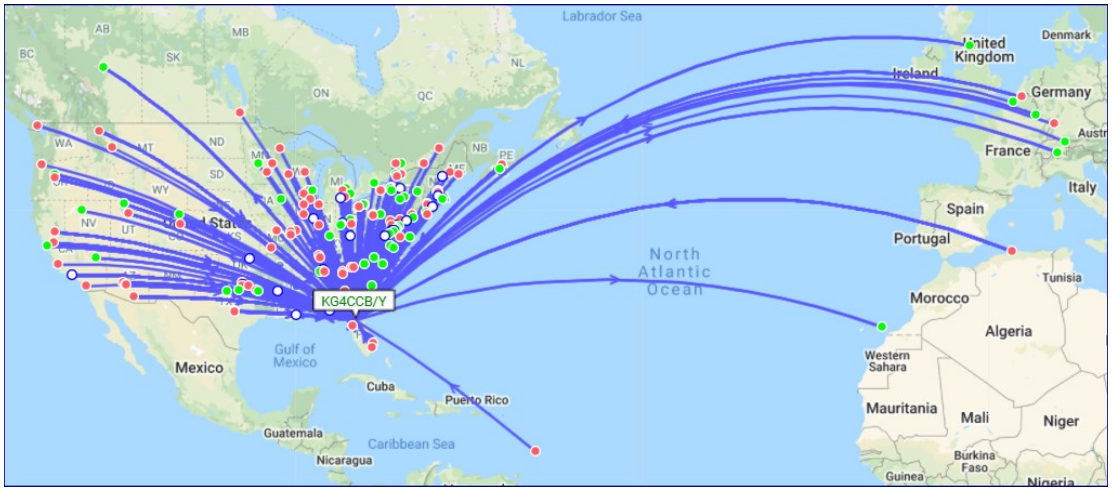
Transmitting

Orientation	Spots Total / per hr	# Hours	Distribution	Most km	Least km
20m HamStk	1730 / 102	17	US, CA, 8-EU, Canary Isles, PR, HI	7799	925
20m Hustler	930 / 98	9.5	US. CA, EU, Caribbean, Australia	7600	925
40m HamStk	862 / 75	11.5	US, 3 EU, Canary Isl	7799	343
40m Hustler	1367 / 83	16.5	US, 3 EU	7778	338

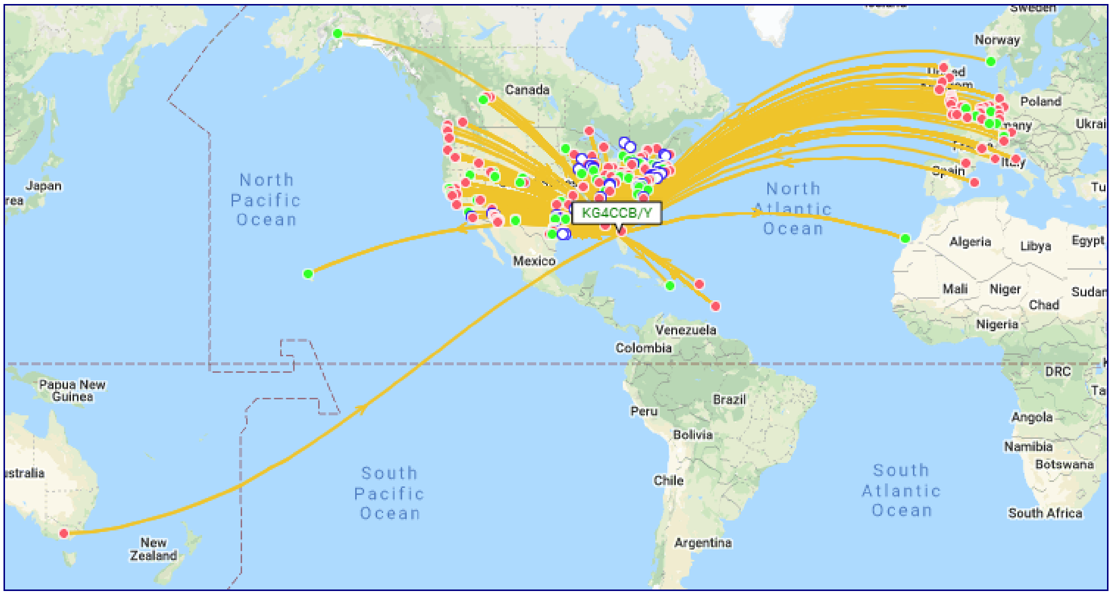
Continued on next page….

Receiving

Orientation	Total spots	# Hours	Europe	Other DX	Most km	Least km
20m HamStk	2240	24	38	3	15589	123
20m Hustler	2442	24	17	8	18264	211
40m HamStk	2151	24	2	1	7721	78
40m Hustler	1497	24	3	0	8161	199



Combined transmit / receive with 40m Ham Stick in rooftop Mag Mount



Combined transmit / receive with 20m Ham Stick in rooftop Mag Mount

Finally, I considered the antenna height relative to the Forester roof, comparing Hustler antennas in roof top mag mount and Ham Sticks in trailer hitch mount. The roof is approximately 51-in above the Trailer hitch antenna mount.The Hustler antennas extend as much as 29-in more than the Hamstick antennas above the vehicle roof. The Ham Stick extension above the roof is like the height of Diamond 2m / 70cm antennas, which are commonly 36-in to 40-in plus the luggage rack motorized mount which will add a few inches.

Continued on next page….

Antenna	Overall Length	Height above roof	Transport length
20m Ham Stick	95-in	43-in	50-in
40m Ham Stick	91-in	40-in	50-in
Hustler 20m	50-in	52-in (with mount)	29-in
Hustler 40m	67-in	69-in (with mount)	45-in

In summary, the test results indicate the following:

- More spots are realized with NW orientation of the vehicle, likely due to the presence of more receiving / transmitting stations on land than at sea
- Use of the Ham Sticks in the roof top mag mounts is practical with the vehicle parked somewhere, but not while in motion.
- Summary comparative data is provided in the table below.

Antenna	Mount	Transmit spots/hr	Receive spots/hr
40m Hamstick	Trailer Hitch	40	27
20m Hamstick		70	24
40m Hustler	Rooftop Magnetic	83	62
40m Hamstick		75	90
20m Hustler		98	102
20m Hamstick		102	93

- The 20-meter Hamstick in the trailer hitch mount is less effective than the 20-meter rooftop configurations. On the rooftop, the two antennas are comparable.
- The 40-meter Hamstick in the trailer hitch mount is less effective than the 40-m rooftop configurations. On the rooftop, the two antennas are comparable.
- As a reference, the average of 88 receive cycles conducted at home with various permanent vertical and dipole antennas consists of 1,440 spots, 64 spots /hour, 12 spots in Europe, and greatest distance of 8,004 km. On occasion 24 hour receive sessions have realized 4,000 to 5,000 spots at rates of 150 to 250 spots/hourS
- SSB performance will not be the same as WSPR performance.
-

CONCLUSION

The trailer hitch Hamstick antenna configuration will provide sufficient performance to justify installing an HF rig in my Forester in addition to a 2m/70cm rig and a 2m/70cm antenna on a Diamond motorized mount on the luggage rack. The trailer hitch mount / Hamstick will be put in place when HF communication is needed or desired. The coax will be 'permanently' installed. The Hamsticks should be usable with the vehicle in motion. The antenna connection near the trailer hitch for the Hamstick will also provide a convenient way to connect an external dipole or vertical when parked for a field exercise.

I expect to use Sound Depot & Performance in Gainesville to install the radios and cables, plus my dashcam power cord, for a professional installation (on the recommendation of the Levy County ham with the nice pickup). Now I just need to select the radios … recommendations are welcome.